05/05/14 Agenda:

- Review Homework
  - Worksheet 7 - Volume of Pyramids & Cones

- Section 12.6 - SA & Volume of Spheres

- Update Formula Sheet

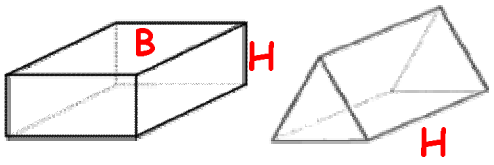
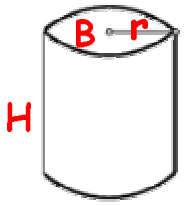
- Homework
  - Worksheet 8 - Spheres

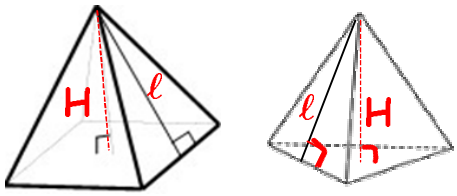
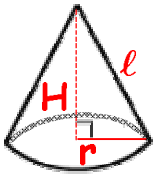
- Start Review Tomorrow
- UNIT TEST on Friday!!!

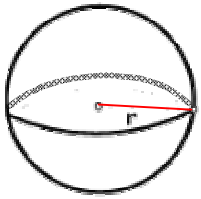
SURFACE AREA AND VOLUME FORMULAS

Name: Answer Key

KEY:	
L.A. = Lateral Area	P = perimeter of base
S.A. = Surface Area	B = area of base
V = Volume	H = height of figure
	ℓ = slant height of figure

Straight-Sided Figures (Repeating Base) 2 Bases	PRISMS	CYLINDERS
L.A. = $P \cdot H$ S.A. = $L.A. + 2 \cdot B$ V = $B \cdot H$		 P = $C = 2\pi r$ B = πr^2

Pointed Figures (Shrinking Base) 1 Base	PYRAMIDS	CONES
L.A. = $\frac{P \cdot \ell}{2}$ S.A. = $L.A. + B$ V = $\frac{B \cdot H}{3}$		 P = $C = 2\pi r$ B = πr^2

Spheres No Bases	SPHERES
S.A. = $4\pi r^2$ V = $\frac{4\pi r^3}{3}$	

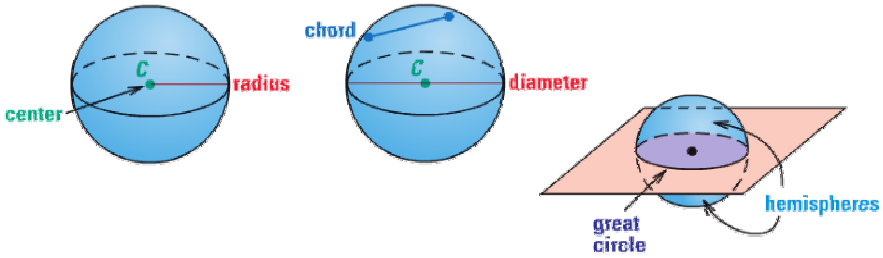
Unit 11 Day 8 - Surface Area & Volume of Spheres

Target 11E

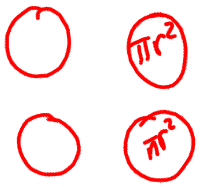
May 6, 2014

Sphere:

- A 3-D shape defined as the set of all points in space equidistant from a given point called the **center.**
- The **radius** of the sphere is the distance from the center to a point on the sphere.
- A **chord** is a line segment with endpoints on the sphere.
- The **diameter** of the sphere is a chord that goes through the center.
- A **hemisphere** is half of a sphere.

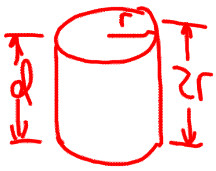


Surface Area of a Sphere: http://www.youtube.com/watch?v=jaL8Kuv6YHo



$$SA_{SPHERE} = 4\pi r^2$$

Volume of a Sphere: http://www.youtube.com/watch?v=aLyQddyY8ik



$$V = B \cdot H$$
$$= \pi r^2 \cdot 2r$$
$$= 2\pi r^3$$

$$V_{SPHERE} = \frac{2}{3}(2\pi r^3) = \frac{4}{3}\pi r^3$$

Unit 11 Day 8 - Surface Area & Volume of Spheres
Target 11E

May 6, 2014

THEOREM *For Your Notebook*

THEOREM 12.11 Surface Area of a Sphere

The surface area S of a sphere is

$S = 4\pi r^2$,

where r is the radius of the sphere.

$S = 4\pi r^2$

THEOREM *For Your Notebook*

THEOREM 12.12 Volume of a Sphere

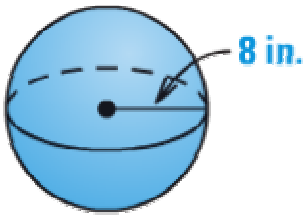
The volume V of a sphere is

$V = \frac{4}{3}\pi r^3$,

where r is the radius of the sphere.

$V = \frac{4}{3}\pi r^3$

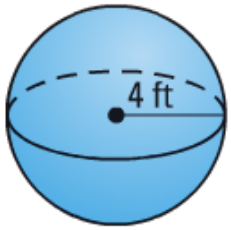
Find the surface area and volume of the sphere:
(leave the answer in terms of π)



$SA = 4\pi r^2$
$= 4\pi 8^2$
$= 256\pi \text{ in}^2$

$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi 8^3$
$= \frac{2048\pi}{3} = 682\frac{2}{3}\pi \text{ in}^3$

You try:
Find the surface area and volume of the sphere:
(leave the answer in terms of π)



$SA = 64\pi \text{ ft}^2$
$V = 85\frac{1}{3}\pi \text{ ft}^3$

Same sphere, what if it was a hemisphere?

$SA = 32\pi \text{ ft}^2$ ← HALF SPHERE
$+ 16\pi \text{ ft}^2$ ← BASE (CIRCLE)
$48\pi \text{ ft}^2$

$V = 43\frac{2}{3}\pi \text{ ft}^3$

Unit 11 Day 8 - Surface Area & Volume of Spheres

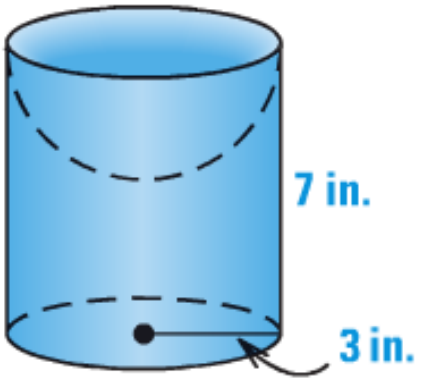
Target 11E

May 6, 2014

EXTREME SPORTS In a sport called *sphereing*, a person rolls down a hill inside an inflatable ball surrounded by another ball. The circumference of the outer ball is 12π feet. Find the surface area of the outer ball.

Unit 11 Day 8 - Surface Area & Volume of Spheres
Target 11E May 6, 2014

Find the surface area and volume of the solids:
(leave answers in terms of π)



$V = V_{CYL} - V_{HEMI}$

$SA = B_{CYL} + LA_{CYL} + \frac{1}{2} SA_{SPHERE}$